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Single-Bid Awards Under the GSA Service Schedules

ABSTRACT

This study seeks to examine the verity of the common perception that single-bid orders are more costly, lower in performance quality, and shorter in pre-award process time than competitively-bid orders. To this end, we look at why single-bid orders exist in the current procurement system, how these orders measure up to competitively-bid orders in cost and performance, and how customer satisfaction varies over time and with the number of bids received. 60 orders from six different government agencies under the GSA Service Schedules were analyzed. Contract files were reviewed, interviews with both contract and program officers were conducted, and the resultant data were examined using a variety of quantitative analysis methods.

GSA U.S. General Services Administration

Single-Bid Awards Under the GSA Service Schedules

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ABSTRACT

This study seeks to examine the verity of the common perception that single-bid orders are more costly, lower in performance quality, and shorter in pre-award process time than competitively-bid orders. To this end, we look at why single-bid orders exist in the current procurement system, how these orders measure up to competitively-bid orders in cost and performance, and how customer satisfaction varies over time and with the number of bids received. 60 orders from six different government agencies under the GSA Service Schedules were analyzed. Contract files were reviewed, interviews with both contract and program officers were conducted, and the resultant data were examined using a variety of quantitative analysis methods.

EXECUTIVE SUMMARY

In examining how satisfaction and cost vary across single-bid and multi-bid contracts and how government satisfaction has changed over time, we obtained the following results. In short, we found that single-bid orders are not more costly, are not lower in performance quality, and that award process time is not related to the number of bids. More detailed outcomes are available in the Analysis and Discussion sections.

SATISFACTION

High Satisfaction Levels

Our findings reveal that the current process for selecting vendors results in **high levels of customer satisfaction**. We know from contract reviews that a standard approach to "best value" is judged on the breadth of technical expertise, the extent of past performance or corporate excellence, personnel qualification, and price; and while the weights assigned to each criterion vary by agency, technical expertise and past performance usually rank above price. The customer satisfaction measures we relied on address satisfaction with this best value judgment. Overall, we observed low dissatisfaction levels and very high ratings on vendor accomplishment, delivery, cooperation and prices.

Improved Satisfaction Over Time

Analysis shows **satisfaction improved over time**. Compared to a similar study done fourteen years ago by Dr. Steve Kelman, there are marked improvements in satisfaction within the procurement process. Acknowledging for differences between this study and that of Kelman, vendor performance and customer satisfaction improved substantially on

identical questions between the two studies. This change is likely due to a combination of new legislation in the 1990s, greater customer responsibility, and a greater demand for quality services.

No Decrease in Satisfaction in Single-bid v. Multi-bid

Satisfaction did not decrease with the number of bids on a given contract; in fact, single-bid and sole source awards had *lower* dissatisfaction ratings than multi-bid awards. Similarly, they have higher satisfaction ratings in all other categories. These observations do not mean we commit to the extreme and say all single-bids are great for government business; rather, we are hesitant to condemn single-bid awards under current procurement regulations.

Recommendation: Maintain existing legislative reforms. Clearly it has been effective thus far. The role of Contract Officers has changed over time, as the FAR allows them leeway to operate on their best business judgment. These reforms have improved Contract Officer discretion in the process and ultimately led to an increase in satisfaction with the process. More streamlining of the FAR to make information more easily accessible could be warranted.

PRICE AND PROCESS LENGTH

No Significance Between Single-bid and Contract Value

There is no statistical relationship between single-bids and contract value. Contrary to expectations, analysis did not support that single bids are higher in value (with significance). In a comparison of means, multi-bid and single-bid awards have similar average values; however, sole source awards are higher in mean value. .

Analysis also shows that the length of time to get under contract remains an issue for sole source awards. For example, we know that one third of the sole source awards reviewed had some relation to time constraints; and in five cases customers failed to allocate more than four days for the awards process. Compared to multi-bid awards that averaged 6.6 weeks, sole source awards averaged 2.8 weeks in award process time.

Findings show that increases in award process time are associated with increases in all satisfaction levels, with the exception of vendor cooperation. This is likely due to more opportunities for negotiating a fair price, more time to specify the vendor role, more time evaluating best value, and more time competing the project.

No Significance in Discounts

We speculated that lower competition would be associated with lower discounts or no discounts; however, **there is no statistical significance to support this claim.** This is likely the result of a difficulty in obtaining reliable data. Furthermore, many immeasurable factors influence discounts. Discounts are usually offered for three reasons: Vendors want to continue work on future government contracts; vendors have a history of good relationships with the customer; and vendors think others are competing for the award.

Relationship Between Increases in Time and Contract Value

We determine that the length of award process time is associated with contract value. **An increase in the length of the award process is associated with an increase in contract value.** We do not, however, assert that time increases the contract value; rather, larger contracts may necessitate a lengthening of the award process to allow for competition. In fact, we find that efforts to compete are associated with an increase in contract value of between 57 and 69 percent relative to no efforts to compete – the higher the value, the more likely the search for competition.

Recommendation: Customers engaged in advanced planning would likely eliminate the higher costs associated with single bids. Improvement may be needed in this area. The reluctance to compete contracts based on a need for quick turnaround time on contract renewals is a poor excuse for urgency.

We advise customers to engage in forward planning. Some vendors are known to operate company-specific information technology systems that would require future sole source follow-on contracts for additional project work, network maintenance, or continued database management. Selecting a vendor known to have systems associated with high transition costs for contract renewal is poor management practice.

HIDDEN COMPETITION

Hidden Competition Affects The Number of Bids

The evidence suggests that **"hidden competition"** (where vendors are intimidated by the presence of one or more vendors they perceive to have an advantage, and as a result fail to bid) **does play a role in how many vendors bid on an award.** While this provokes the obvious recommendation calling for increasing efforts to ensure vendors are not dissuaded from competing, the small number of "hidden competition" awards (10 of 60) precludes a clear judgment to this effect.

Recommendation: Attention to hidden competition is warranted. Despite our hesitance to draw a specific conclusion, logic dictates that fair competition is paramount. Responsible agencies will try to compete large businesses with others, small businesses with others, or if mixed, give small businesses some advantage in the bidding process to ensure fair competition.

STATEMENT OF WORK

Relationship Between Statement of Work and Satisfaction

An increase in the Statement of Work (SOW) quality rating is associated with an increase in customer satisfaction. This is not a surprising trend, given that several Contract Officers complained of problems with SOW quality during the award process. Sloppy or vague SOWs leave the vendor with an incomplete or incoherent set of guidelines for the contracted work. As such, SOWs of lesser quality would increase prices and decrease work quality. Our data supports this trend. In fact, increasing the quality rating of SOWs by one point on a scale of one to five increases the three satisfaction ratings by .4 points. With already high average ratings above 9.4, this small change would result in a relatively large increase in satisfaction.

Recommendation: Improving the SOW increases customer satisfaction on performance. Specific SOWs define the vendor role, while vague SOWs can leave much up to vendor discretion and lead to cost overruns. Given the nature of best value judgments, it is in the best interest of each customer to improve or keep high standards for the SOW. This calls for well-written and detailed SOWs, which would also preclude unnecessary increases in award process time.

Single Bid Awards Under the GSA Service Schedules

INTRODUCTION

In the 21st century the role of government will shift from its more historic mission of being primarily the provider of goods and services to the role of being the manager of the providers of the goods and services. The government is changing from hiring people who are more of the "doers" to hiring people with the skills to manage and oversee the "doers"— the latter largely coming from the competitive private sector[1].

This more involved public-private sector partnership within the last decade is the new way of conducting federal procurement and acquisitions. Reform in the past decade brought contracting for goods and services to new heights, as reduced costs to federal agencies and taxpayers engendered bureaucratic reform, and increased both large and small business awards. Thus, the acquisition reform results seem to be demonstrating that not only does the government get better products and services at lower prices from contracting, but that the supplier community is better off and more competitive. There are many opportunities to assure that reforms are continued into the future, and that others are introduced to maintain the momentum. Nevertheless, in spite of the initial success of the acquisition reform efforts during the 1990s, problems still remain within the acquisition process.

Conventional wisdom tells us that one of these problems is single-bid orders. It is a common perception that single-bid contracts are more costly, lower in performance quality, and shorter in pre-award process time than competitively-bid orders. We address this concern by examining contracts off the General Services Administration (GSA) Federal Supply Schedules (FSS) for information technology (IT) contracts. Specifically, there is fear that federal agencies (GSA customers) are awarding a large number of IT service contracts without adequate competition from private sector firms (vendors). As such, government agencies might stand to lose from lack of adequate competition; bypassing any competition during the bidding phase could amount to excess costs and decreased quality for outsourced IT services. Much worse is the possibility of corruption, favoritism, laziness, sloppiness or haste from contracting officers in the award process. If such a trend exists, the effectiveness of federal procurement policy and the mandated processes by which contracting agencies must follow become questionable, and would require lawmakers to adjust a decade's worth of legislation to improve the federal procurement process.

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[1] The Procurement Revolution. Ed. Abramson, Mark A. and Roland S. Harris III. New York: Rowman and Littlefield Publishers Inc, 2003. p. 16

With this study, we analyze and discuss the following:

- How satisfaction and cost varies between single-bid and multi-bid contracts
- How government satisfaction with the procurement process has changed over time

We will discuss whether there are a large number of single-bid contracts, what causes single-bid contracts, how the procurement process and vendor performance has changed, and if there is a need for a better way to handle single-bid contracts off the GSA Service Schedules.

BACKGROUND

The U.S. General Services Administration (GSA)

The client, GSA, enters into contracts with commercial firms to provide supplies and services at specified prices for given periods of time. Their programs mirror commercial buying practices more than any other procurement process in the federal government. They provide customers with millions of state-of-the-art, high-quality commercial products and related services at lower prices than if agencies were to directly procure goods and services on their own.

Funded by the federal government, GSA is comprised of 13,000 associates who support over one million federal workers. The role of GSA is to aid federal agencies in buying space, products and services. They do this by contracting with federal and commercial sources. By leveraging the volume of the federal market and negotiating large, multi-user contracts, GSA is able to drive down prices for federal agencies. For businesses, the advantage is the opportunity to sell billions of dollars worth of products and services.

The Federal Acquisition Regulation

IT service contracts using Federal Supply Schedules fall under the Federal Acquisition Regulation (FAR). This statutory provision has institutionalized the preference for the use of commercial products and commercial practices in government contracting.

GSA awards and administers Federal Supply Schedules through authority from the Federal Property Administrative Services Act of 1949. Pursuant to this legislation, GSA enters into government-wide contracts with private vendors to provide a number of products and services for given periods of time.

GSA determines contracts ordered off of the Federal Supply Schedules are priced as "fair and reasonable".[2] The FAR mandates that Request for Quotations (RFQs) be sent to at least three vendors to attract more than one bid in the award process. While there is no statutory requirement on number of bids for government agencies using the Federal Supply Schedules, the number of single-bid contract awards (awards where only one bid is received, though more than one vendor was solicited) is the focus of this study. It suggests concern with the competitive processes stipulated in the FAR. Ideally, competition results in the best value for the government; the lack of competition in single-bid awards may have a number of adverse implications to the value of contracted services.

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[2] [FAR 8.4]

The existence of single-bids also suggests the traditional method of sole source (awards where no competition is deemed necessary) is avoided, or being used sparingly as increased scrutiny may be a disincentive for using the sole source provision. Under the FAR, customers must not only clearly specify all the services available within their request, but also ensure that each contractor is given a fair opportunity to be considered; and while FAR does grant exceptions to the rule, such awards are intended to be used in moderation. Part 6.3 of the FAR stipulates that exceptions are warranted. These include situations where only one responsible source—and no other supplies or services—will satisfy agency requirements, as well as events or work with unusual and compelling urgency.

Procurement approach, procedure and culture are some of the additional changes beyond the statutory requirements. Prior to procurement reform, there was very little actual fraud or other illegal actions, but there was enormous waste in government procurement. The problem was not the people, but the processes being used. With a wealth of legislation passed since the days of excess government waste, that problem has been remedied. Yet, broader issues of erroneous contract approvals have now emerged with a world of increased government outsourcing—particularly in IT services—hinting that if this is a problem, it might rest with the people managing the bidding process.

Literature reveals little on the problem of contracting officer subjectivity in the bidding process, thus suggesting data gaps in the area of intent; however, it is known that the extent of discretion by contracting officers has evolved over time. Previously, contracting officers assessing what action they could or could not take on a particular case would search regulations and procedural manuals to find a specific authorization. Now contracting officers structure solutions based on their best business judgment and search to see if there is a prohibition. This change in authority is articulated in the FAR, stating that members of the procurement team may use their best judgment if a specific strategy, practice, policy or procedure is in the best interests of the government.[3]

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[3] [FAR 1.102(d)]

RESEARCH DESIGN

This study had the following major design features:

- Contract files reviewed were IT service contracts from the GSA Service Schedules.
- Contracts comprised a value range of $500,000 and above. Dollar values were obtained from the Federal Procurement Data System (FPDS) and contract files.
- Contracts were awarded between January 2002 and June 2003.
- 60 orders were reviewed, and 79 interviews conducted. All contract appraisals and in-person interviews took place at government agencies within the Washington, DC area. Contract and Program Officers were interviewed both face-to-face and via telephone.

The Data

We collected three types of data over the course of three weeks for subsequent analysis: Contract data, customer satisfaction data and open-ended response data. A full list of data obtained from both interviews and contract research is documented in the information boxes.

Contract data (Box 1) represents values and information directly pulled from contract files, and includes interviews with Contract Officers (KOs) to obtain data not readily apparent in the files. This data consists of variables such as contract value, discounts,

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Box 1
Contract Data

1. Was there one bid?
2. Was there sole source justification?
3. Was there effort to get competition?
4. Was there hidden or unofficial competition?
5. What type of contract is this?
6. If time and materials, was there an effort to get discounts?
7. If time and materials, was there a not to exceed price?
8. If fixed price, how was the fixed price determined?
9. If fixed price, was there a not to exceed amount in the order, and how was that determined?
10. How was the price determined? Was there negotiation?
11. Is the customer satisfied with the contractor?
12. Are there performance metrics?
13. Rate the specificity of the description of work on a scale of 1-5.
14. Was there any effort to get a discount?
15. What is the percent discount off list price?
16. Was the discount negotiated?
17. Upon order completion, was the final price different than the fixed price? If so, how much?
18. How long did it take to get under contract (in months)?
19. What is the Contract value?

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competition, and length of award process. "Yes/no" answers were coded as dummy variables, while actual values were used for all quantifiable variables.

Customer satisfaction data (Box 2) represents information obtained from in-person interviews. Both Contract and Program Officers were interviewed. Contract Officer

> **Box 2**
> **Customer Satisfaction Data**
>
> 1. On this contract, what percentage of time were you dissatisfied with the performance of this vendor (on a 0 – 100% scale)?
> 2. On a scale of 1 – 10, how would you rate vendor performance on keeping promises?
> 3. On a scale of 1 – 10, how would you rate vendor performance on sticking to the contracted delivery schedule?
> 4. On a scale of 1 to 10, rate vendor performance under the order, on the following dimensions:
>
>   - "The vendor accomplished what we wanted them to."
>   - "The vendor was very cooperative with the government."
>   - "The price was fair and reasonable."

interviews were conducted at the agency site with the contract in-hand to familiarize the interviewee with the vendor. Program Officers (POs) were interviewed via telephone. Because they worked with the vendor on a daily basis, it was not necessary to be present with the contract in hand.

Also, customer offices were located outside our travel proximity, which precluded in-person interviews. Questions 1, 2 and 4 were taken from Dr. Steve Kelman's 1990 book, <u>Procurement and Public Management</u>, in which he conducted a study of vendor performance and government satisfaction prior to procurement reform. Part of this study looks at customer satisfaction over time and across different types of contracts, using Kelman's results as a point of comparison.

Open-ended response data represents qualitative responses to voluntary follow-up questions. The questions listed in Box 3 were sent to Contract Officers over email after in-person interviews were conducted. We used this information to understand the procurement process from the individual participant, gain insight on organizational culture and determine revealing trends or patterns amongst Contract Officer responses. These questions are useful from a management perspective, but bear little relevance to the data analysis other than background information. The answers collected from these e-mail interviews will buttress our findings from regression and frequency distribution data.

> **Box 3**
> **Open-ended Response Data**
>
> 1. Could the procurement process benefit (could the government benefit) from more or less discretion of the part of the contracting office? On the part of the vendor? The customer?
>
> 2. Do you find single-bids to be detrimental? If so, what could you suggest to minimize their role in the contracting process?
>
> 3. In your experience, are single-bid contracts any different in terms of performance or price than competitively-bid contracts? Why?
>
> 4. Generally speaking, are there any recommendations you would offer to help improve the procurement process as you know it?
>
> 5. Are there any other thoughts you could share regarding the procurement

Randomization

The exact criteria for obtaining a sample size were:

> 1) all orders must be IT service contracts off the GSA Service Schedules,
> 2) all orders must be greater than $500,000 in value, and
> 3) all orders must be awarded between 6 and 18 months prior to January 1, 2004.

While the search returned a number of agencies across the United States—all adequate for this study—we were constrained to the Washington, DC area for travel, schedule and financial considerations. GSA selected government agencies with the most orders returned through the FPDS search, and those agencies that agreed to participate in this study were chosen.

As such, there may be selection bias in our results. The sample does not fully represent the whole population of government agencies because our study focused only on agencies that agreed to participate. It follows that agencies with nothing amiss would be happy to participate in our study, whereas an agency with something to hide would not. For this reason, it could be the case that we saw only agencies that were well-organized, had competent KOs, and worked well with the POs.

We visited six government agencies in the DC area. There is a possibility that some third variable is associated with being based in DC; perhaps, for whatever reason, agencies

based there are more efficient, more fair, less efficient, or less fair because of their location. With more agencies from different locations in the sample, our selection would have been more representative. Further, each agency had a large enough share of the total contracts to skew the results (had any agency had significantly different results than the others—they did not).

Our sample is representative of a broad spectrum of government sectors. We believe this will counter some of this study's limitations.

Other Limitations and Biases

Access

The remaining limitations came from limits in access to Contract and Program Officers. This explains the disparity in number of Contract versus Program Officers interviewed. Some original Contract Officers were no longer working for the agency or had different contact information. In these cases we were forced to interview the presiding Contract Officer or manager. These individuals did not originally work with the client, and had trouble relating to the customer satisfaction questions. This might also bias the results if those interviewing on behalf of an old employee would negatively comment on the contract because it was not their own work; however, the virtually uniform positive answers alleviate much of this concern.

Program Officers were not located at the agency site, and we were limited to phone interviews. Only a small sample of POs were contacted for much of the same reasons stated above. Interviewing POs was useful in obtaining information from a different perspective; however the small number of POs interviewed will limit our findings.

The Contract Officer provided contact information for Program Officer interviews. This is another indication of selection bias. KOs could withhold information on POs with bad experiences or who documented poor performing vendors. Once we contacted Program Officers, they had a choice of whether or not to conduct the interview, which could also be a source of bias. However, the POs decided whether they would participate in the interview before they knew which order we would be asking them about, so it is probable that this bias—if it does exist—is negligible.

Distorting Truth

We have no reason to believe that either Contract or Program Officers would distort the truth. Each interview contained a review of the Non-Disclosure Agreement, which was signed and circulated throughout all agencies visited. This eliminated the incentive to lie about the order in any way. While one agency did significantly limit the information they allowed Contract Officers to share by "scrubbing" each file prior to our arrival, the objective was to limit what proprietary information could be safely shared with Harvard University researchers, and not to distort the truth.

Sequencing questions did not affect the truthfulness of answers. The majority of Contract Officers commented on more than one contract, experiencing the same set of questions more than once. Some gave vendors positive ratings at the beginning of the interview, and rated poor performing vendors harshly in subsequent questioning. If they were skewing their answers, they would have had ample time to prepare for and mask their responses. This, however, might not be the case for Program Officers. On average, Program Officers were questioned on one vendor, and these interviewees were not familiar with the questioning. While we did inform them of the Non-Disclosure Agreement, it is possible we have some truth distortion in this smaller interview sample. Truth distortion, though, would amount to only a small bias, if any. As we will see, there is little variance between Contract Officer and Program Officer responses to the same questions regarding the same vendors and contracts.

ANALYSIS

Recall that our objectives in this study are to determine the following:

- How satisfaction and cost vary across single-bid and multi-bid contracts
- How government satisfaction has changed over time

In beginning this study, we speculated that single-bid contracts would be more costly, lower in performance quality, and shorter in pre-award process time. Indeed, much of the analysis is focused on examining this statement; however, we also explore the alternative: If single-bid contracts are no different than multi-bid contracts, what else drives variables such as contract value, discounts, and performance? We find significant information by reaching beyond the single- and multi-bid variables to understand the factors driving best value in government procurement.

Summary Statistics of Contract and Program Officers

Customer satisfaction data is separately comprised of Contract and Program Officer responses. We combine these two populations in later satisfaction analysis to increase the sample size of customer satisfaction data and associated significance.

Table 1 offers a glimpse of the satisfaction ratings across contract and program officers, and states the case for the similarity between Contract and Program Officers. In all cases, the majority of respondents gave scores of 10. An even higher percentage gave scores of 9 or 10. For example, among Contract and Program Officers combined, 67.1 percent gave the vendor in question a 10 and 84.9 percent gave the vendor in question a 9 or a 10 on their performance on keeping promises.

Table 1
Percent of Combined Contract and Program Officer Satisfaction Rating

Rating	Promises	Delivery	Accomplishment	Cooperation	Fair Price
10	67.1	62.7	78.4	76.3	79.2
9 or 10	84.9	86.7	93.2	88.2	92.2

The average percent time dissatisfied with the vendor among Contract Officers for the contract in question is 2.04 percent overall. This is reduced to 1.33 percent if we exclude the outlier of 40 percent. However, 88 percent of KOs were not dissatisfied at all. Among the 12 percent who were dissatisfied, the percentage of time they were dissatisfied ranged from 2 to 40 percent, with the average time dissatisfied at 16 percent.

Among Program Officers, the average percent time dissatisfied with the vendor on that contract is 3.49 percent. However, only 6 percent of program officers were dissatisfied at all. Among those dissatisfied, the percentage of time dissatisfied ranged from 10 to100 percent. Excluding the 100 percent as an outlier, the overall percentage is reduced to 1.8 percent. Between Contract and Program Officers combined, 82.9 percent were not dissatisfied at all (dissatisfied 0 percent of the time) with the vendor.

Table 2
Average Customer Satisfaction Ratings, Contract v. Program Officers

Category Dissatisfaction		Promises	Delivery	Accomplishment	Cooperation	Fair price
Contract Officer	2.04 %	9.46	9.58	9.62	9.49	9.72
Program Officer	3.49 %	9.0	9.32	9.66	9.45	9.58
Correlation	.82	.78	.84	.82	.84	.62
Difference in Means Significance	No Sig.	No Sig.	No Sig.	No Sig.	No Sig.	No Sig.

Difference in means testing revealed a negligible disparity between the average program officer response and the average contract officer response at all significance levels. The correlations between contract and program officer responses to the above statement are also generally very high, meaning that the responses of the program officer and the contract officer are very similar for each contract.

FINDINGS

This analysis focuses on five criteria for addressing the objectives stated above. First, a detailed look at the distribution of contracts by value, type, and time will provide a fundamental understanding of variance across contracts. This foundation will buttress findings in ensuing regression analysis. Second, customer satisfaction data analysis will shed light on trends between the six measures of satisfaction and contract data. In this section, we determine which variables influence customer satisfaction. Third, we look closely at total contract value to find relationships with other variables in the contract data. This section will offer the strongest comparison between contract groupings (explained below) and contract value. Fourth, we draw relationships between single-bids and other contract data variables. Analysis will reveal the factors that bring about single-bids in our data set. Lastly, we analyze if discounts relate to any of the contract data variables. In this last analysis we use overall vendor performance on past contracts as a variable to reveal trends in customer-vendor relationships.

1. Distribution And Make-up of Contracts

We separated 60 contracts into four groups—effort to get competition, hidden competition, single-bid (from this point forward in the analysis we use this interchangeably with "one-bid" due to the single-bid variable with this name), and sole source—to observe the effects on time and value. Figure 1 below summarizes the distribution of our sample.

These four group types are dummy variables, which we further divide into eight sub-groupings to compare average contract value. Figure 2 summarizes average contract value within and across these sub-groupings.

Figure 1
Distribution of Contracts (n=60)
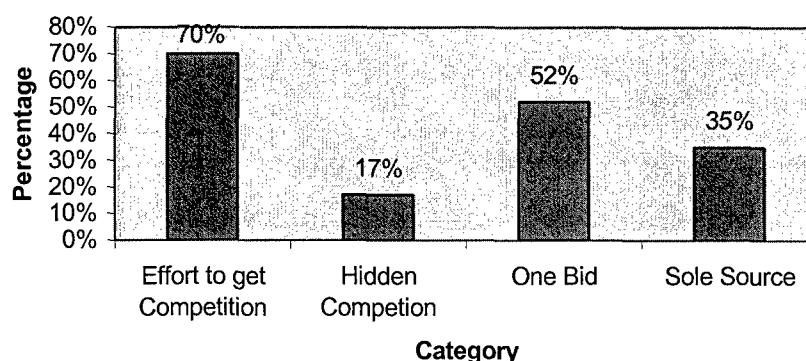
The striking features at first glance are the disparity in subgroups. Awards with efforts to get competition relative to those without efforts to get competition are higher in average value by $306,000. One-bid contracts are higher in average value than multiple bid awards by $269,000, and awards with hidden competition are $192,000 higher in value than awards without hidden competition. By contrast, sole source awards show no major difference in the sub-grouping.

Figure 2
**Distribution of Contract Value by Sub-group**
(in thousands)
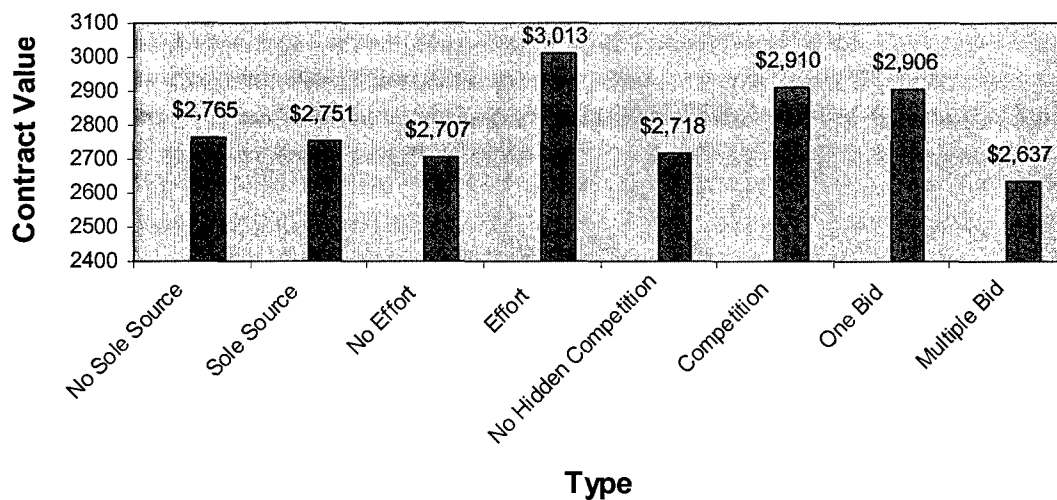
These observations can be misleading for several reasons. First, standard deviations of these values are very large, which indicate a fair amount of outliers in the sample. Second, the number within each divided group is unequal. A quick look at Figure 1 will reveal the disparity. 70 percent of awards had some effort to get competition; 17 percent had some hidden competition; 52 percent had one bid, which includes sole source; and 35 percent were sole source. Lastly, this observation falls far short of any determination that says one-bid awards, for example, are higher in cost than multi-bid awards. Factors such as time, customer choice, and type of work are also relevant.

Time, Group, and Value

Time in the award process is weakly correlated with total value (.21); however, controlling for contract group gives a fair judgment of what the data groupings look like when plotting time against contract value. Figure 3 below is a plot of all contracts.

Figure 3
Summary of All Contracts
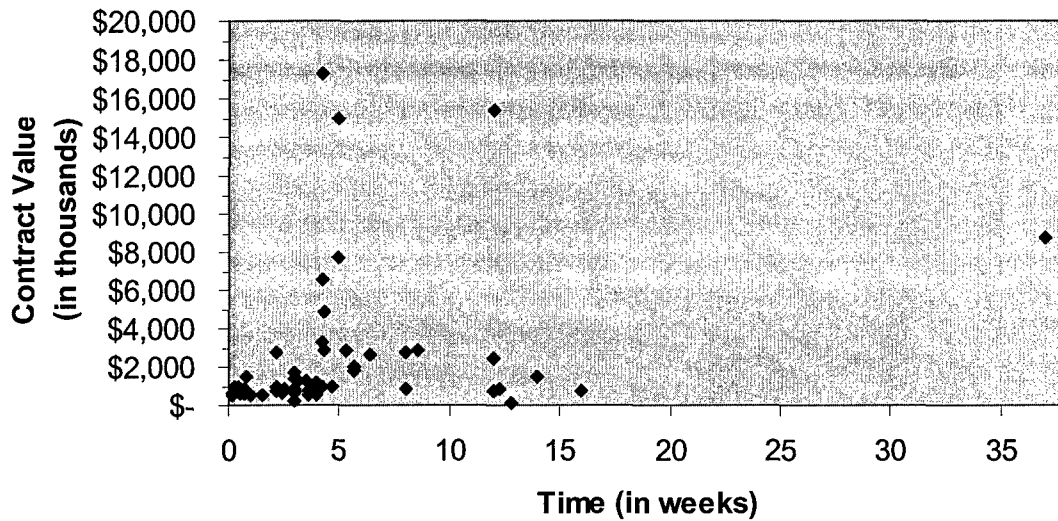
Contracts are bunched around the $500,000 to $4 million value range. Several outliers also show that depending on groupings by type, average contract values can be skewed. Figure 4 below shows the separation of one-bid and multi-bid contracts. One-bid awards have three outliers above the $14 million value range. Multi-bid awards are consistent with groupings between $500,000 and $8 million.

Breaking down the one-bid and multiple bid types gives more detail as to why values may be higher for the two groups types. Chart 1 below breaks down the composition of one-bid awards.

Figure 4
One Bid vs. Multiple Bid
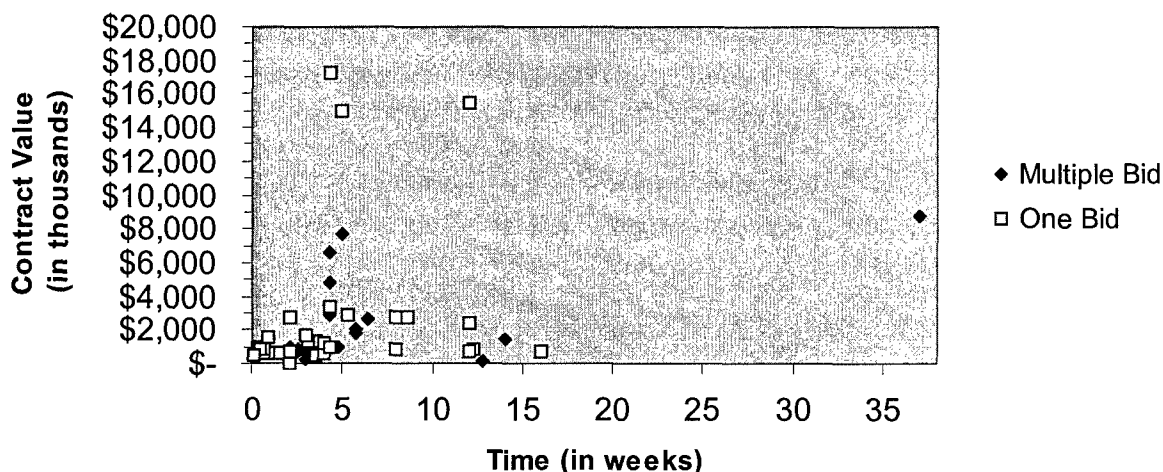
Incumbent vendors, vendors with exceptional past performance, or follow-on contracts make up 25 percent of one-bid awards; 67 percent result from no other bid, time, or expertise constraints; and 8 percent result from customer choice.

Chart 1
Composition of One Bid Awards
(excluding sole source)
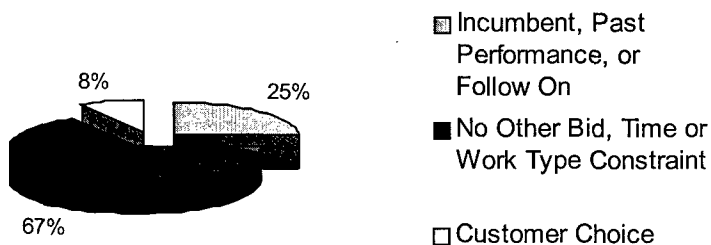
Efforts to compete and hidden competition show another distribution of contract values relative to time. First, 70 percent of the awards exhibited some effort to compete, while only 17 percent had hidden competition. Higher average contract values of awards with effort relative to those without effort are clear based on raw dollar value and aggregate number. Hidden competition shows similar trends. The scatter plots below in Figure 5(a) and 5(b) show these observations.

Figure 5(a)
Efforts to Compete Contract

Contract Value (in thousands)

◆ No Effort
◇ Effort

Time (in weeks)

Figure 5(b)
Hidden Competition

Contract Value (in thousands)

◆ Hidden
□ Open

Time (in weeks)

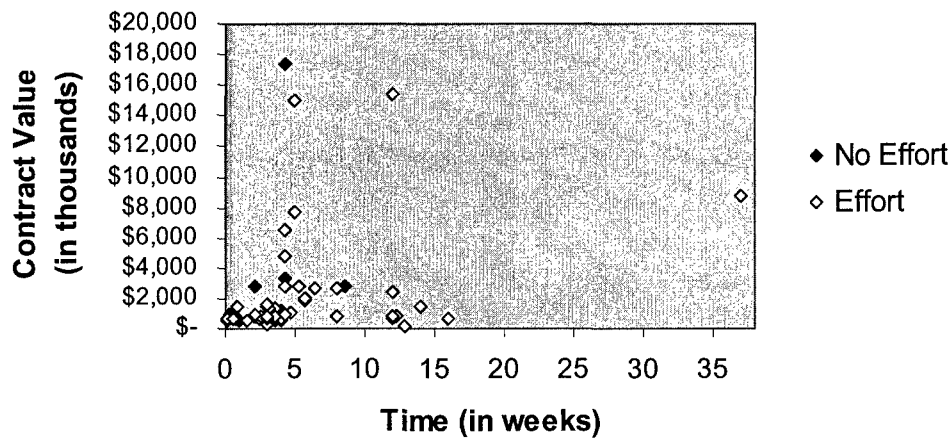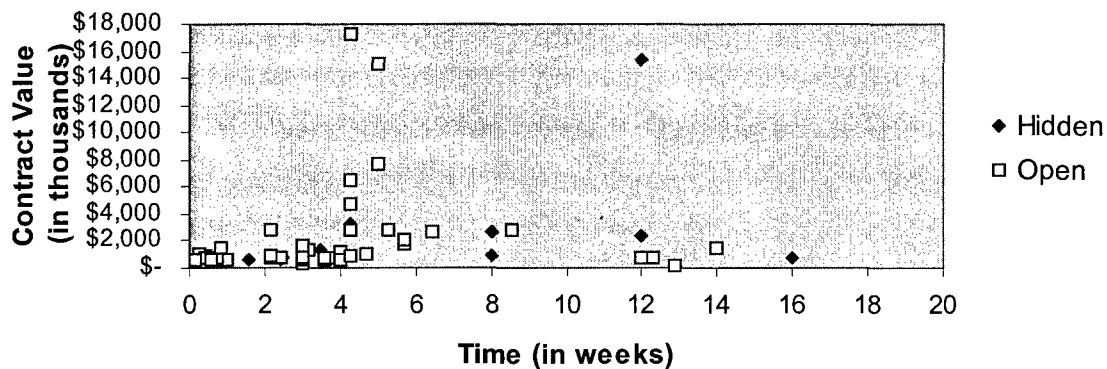Finally, controlling for sole source contracts shows that these awards tend to be in low value, with upward pressure on the average due to outliers. There is one outlier upwards of $14 million, but the majority fluctuates below $4 million. Figure 6 shows the relationship below. These results depict a constant dollar amount for IT sole source awards, as well as a concentrated time of less than 9 weeks.

Figure 6
Sole Source

Contract Value (in thousands) vs Time (in weeks)
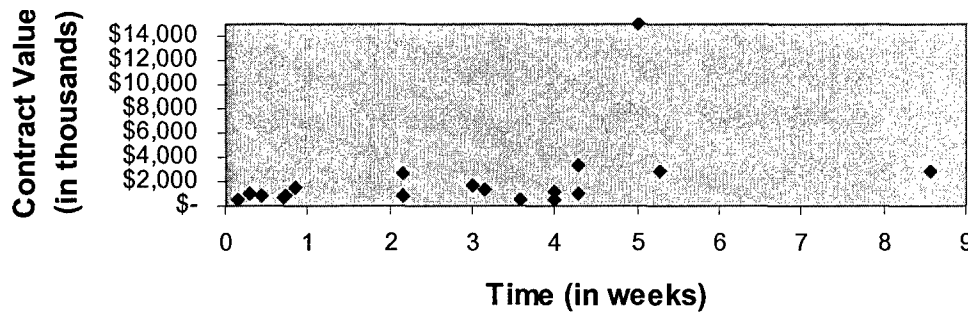
2. Customer Satisfaction

We arrange customer satisfaction analysis as a series of modeled regressions for all satisfaction questions. Each question serves as the dependent variable for separate regression models. We seek evidence of some relationship between the independent variables (primarily contract data) and customer satisfaction, the strength of this relationship, and their influence in best value judgments. Significance is judged on .01, .05, and .1 levels; however, coefficients at the .1 levels should be noted as weak in statistical significance.

Percent Time Dissatisfied With The Vendor

Five ordinary least squares (OLS) regressions were modeled for vendor dissatisfaction as the dependent variable.[4] The coefficient on time shows significance in Regressions 2 and 3 at the .1 levels, but vanishes in Regression 5 when fair price is added. The low significance on time indicates no association between time and dissatisfaction level, holding all other variables constant. Fair price alone, however, is significant (Regression 4 and 5). A one-unit increase in price satisfaction rating is associated with a decrease in dissatisfaction level by 9.43 percent (.01). Controlling for SOW, time, discount, one-bid and log of contract value, the decrease in dissatisfaction rating associated with a one-unit increase in price satisfaction changes slightly to 9.68 percent (.01).[5] Overall analysis here reveals very weak results, with the exception being statistical significance only with fair price. As such, judgment on fair price is highly correlated to dissatisfaction (-0.85); this trend will be consistent with other satisfaction measures as price judgment is a large part of satisfaction in general.

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[4] See Appendix for complete data and independent variable definitions
[5] See Appendix, Table 2

Table 3
Summary of Significant Variables for Pct Dissatisfaction (OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Pct Dissatisfaction	Time	.1	2, 3
(0 to 100)	Vendor Fair Price	.01	4, 5

Rating on Vendor Keeping Promises

Vendor keeping promises as the dependent variable gave several statistically significant results.[6] One-bid as a regressor is not significant until the use of a polynomial (Regression 3). This yields a relationship between one-bid and the dependent variable. The predicted change in satisfaction rating on vendors keeping promises associated with a one-bid order relative to a multi-bid award on a scale of 1 to 10 is .79, holding discount, contract value, and the square of contract value constant (.05). Leaving out contract value in Regression 4, and holding SOW and time constant, increases the predicted change slightly to .84 at the .05 level.

Similarly, time and SOW also have significance (.05 respectively). Increases in time (in weeks) of the award process are associated with a slight increase (.11) in the vendor keeping promises rating; and a one unit increases in SOW (on a 1 to 5 scale) is associated with a .44 increase in vendor keeping promises.

Significance and magnitude on one-bid remains unchanged after adding fair price and log of contract value; however time and SOW drop out by holding these additional regressors constant. In the last regression, a one-unit increase in fair price rating is associated with a .92 increase in vendor keeping promises rating, holding all other regressors constant (.01).[7] Both one-bid relative to multiple bids and increases fair price rating, are strongly associated with satisfaction ratings on vendors keeping promises.

Table 4
Summary of Significant Variables for Vendor Promises (OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Vendor Promises	One-bid	.01, .05	3,4,5,6
(1 to 10)	Time	.05, .1	4,6
	Statement of Work	.05	4
	Vendor Fair Price	.01	5,6

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[6] See Appendix, Table 3, OLS regression models
[7] See Appendix, Table 3, OLS regression models for complete list of regressors

Rating on Vendor Sticking to The Delivery Schedule

We observe a similar trend of statistical significance with one-bid and fair price while using the delivery schedule rating (scale of 1 to 10) as the dependent variable. The predicted change in delivery schedule rating associated with a one-bid award relative to a multi-bid award is 1.03, holding discounts constant (.05).

Adding more variables to the equation maintains the level of significance on one-bid while its magnitude diminishes. Adding time, SOW, contract value, the square of contract value and fair price shows the upward bias in one-bid. Holding these constant, the predicted change in delivery schedule rating associated with a one-bid award is .56 relative to multi-bid awards (.05).

Also significant is fair price in Regression 4 (.01). A one-unit increase in fair price rating is associated with a .77 increase in delivery schedule rating. Aside from one-bid and fair price, no other variables were statistically significant at the .01 or .05 level in these models.

Table 5
Summary of Significant Variables for Vendor Delivery (OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Vendor Delivery	One-bid	.05	1,2,3,4
(1 to 10)	Time	.1	3
	Contract Value	.1	3
	Vendor Fair Price	.01	4

Rating on Vendor Accomplishing The Objective

Results are slightly different with the vendor accomplishment rating as the dependent variable. One-bid is only significant here at the .1 level, and we therefore ignore its impact on vendor accomplishment. Vendor accomplishment is important in a best value judgment. Not only does the measure include price satisfaction, but also quality of work, expertise, timeliness, product delivery, and cooperation are all very much relevant to the measure. The focus is therefore shifted to SOW, contract value, time, and fair price.[8]

Regression 4 shows significance in both time and SOW (.05 respectively). A one-week increase in award process time is associated with a .086 increase in vendor accomplishment rating. Similarly, an increase in one unit of the statement of work quality rating is associated with a .36 increase in vendor accomplishment rating.

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[8] See Appendix, Table 5, OLS regression models for complete list of regressors

These trends emphasize the importance of SOW quality and the award process. A quality SOW will leave little room for incongruence between what the customer expects and what the vendor provides. The award process itself is important if it engenders a competition where best value is determined. Regressions 3 and 4 support this relationship.

Including fair price drops time and SOW from the model.[9] A one-unit increase in fair price rating is associated with a .55 increase in vendor accomplishment rating, holding one-bid, discount, time, SOW and contract value constant (.05). This might render some assumptions ineffective; however, we presume the customer always negotiates a fair price, regardless of any objective. Here, we can question whether it belongs in the model at all.

Table 6
Summary of Significant Variables for Vendor Accomplishment (OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Vendor Accomplish	One-bid	.01	1,2,3,4
(1 to 10)	Time	.05, .1	3,4
	Statement of Work	.05	3,4
	Vendor Fair Price	.01	5

Rating on Vendor Cooperation

The significance of one-bid is fairly consistent in this model with vendor cooperation as the dependent variable. The predicted change in vendor cooperation rating associated with a one-bid award relative to a multi-bid award is 1.06, holding discount and labor hours contract constant (.05). Holding a time and materials contract constant brings the significance level of one-bid down to .1, but increases significance in time and materials. The predicted change in vendor cooperation rating associated with a time and materials contract relative to labor hours and fixed price is .627, holding one-bid and discount constant. Including the contract type will help determine if there is a relationship between contract and cooperation under that contract. In this model, statistical significance came only from the time and materials contract.

Time became significant after controlling for an interaction of log of contract value and one-bid. A one-week increase in award process time is associated with a .45 decrease in cooperation, holding SOW, discount and the interaction term constant (.05). A possible explanation might come from the relative importance of contracts. High profile contracts might be scrutinized more than others, which could either demand more from the vendor or be harshly judged.

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[9] See Appendix, Table 5, Regression 5

Adding regressors decreased the significance of contract type, but maintained significance and magnitude for time. Fair price again is significant with a magnitude of .91 (.01).

Table 7
Summary of Significant Variables for Vendor Cooperation (OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Vendor Cooperation	One-bid	.01, .05	1,2,3,7
(1 to 10)	Time	.05	4,7
	Statement of Work	.1	6
	Vendor Fair Price	.01	7
	Time and Materials	.05, .1	2,5,6
	Log (contract) x One-bid	.1	4

Rating on Vendor Price as Fair and Reasonable

With fair price as the dependent variable, the expectation is that discounts and multi-bid contracts would have significant results. On the contrary, the only significant results came in Regression 4 with SOW and time (.05 and .1 respectively).[10] A one-unit increase in SOW rating is associated with a .36 increase in fair price rating, holding one-bid, discount, time, contract value, and the square of contract value constant. While SOW quality can indeed be related to fair price, this is a questionable result. In fact, it is not surprising to find almost no relationship.

Table 8
Summary of Significant Variables for Vendor Fair Price (OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Vendor Fair Price	Time	.1	4
(1 to 10)	Statement of Work	05, .1	3,4

Lack of convincing significance on time does preclude some judgment on fair price. Figure 3 above shows contract values for all awards relative to time. The distribution is fairly inconclusive with higher average values and standard deviations in the 4 to 9 week range compared to a 0 to 3 week and plus 9-week range. Table 9 notes the distribution of averages and standard deviations for this category.

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[10] See Appendix, Table 7, for complete data

Table 9
Mean Contract Value Per Time Category
(in thousands)

Award Process Time (weeks)	Average Contract Value	Standard Deviation
0 to 3	$ 912	510
4 to 9	$4,087	5507
+9	$3,881	5083

Almost all contracts reviewed were said to have had fair and reasonable prices by Contract and Program Officers. While it is surprising that discounts are not significant at any level, the data reveal satisfied customers regardless of discounts. One reason is that prices listed off the GSA schedules are considered fair and reasonable, and any additional discount would only sweeten the deal. The strongest reason is that contract prices are often negotiated. Essentially, a contract is not awarded unless the price is fair and reasonable.[11]

3. Contract Value

Analysis on contract value is set up as several log-linear OLS regressions. Observing the dependent variable—log of contract value—will show percent changes associated with variations in data we think would most influence contract value.[12] This analysis shows strong significance in the influence of two groups discussed above: Effort to get competition and sole source.

Contracts exhibiting some effort to compete show the strongest levels of significance at .01, with one minor exception in Regression 4 (.05). This analysis shows very little OVB. The predicted change in contract value associated with efforts to compete relative to no efforts is 65 percent, holding sole source constant (.01). Increasing the number of variables held constant to one-bid, time, SOW, and sole source, slightly decreases the magnitude of predicted change in contract value to 57 percent.

An interesting relationship exists with sole source awards, which also has strong significance. The predicted change in contract value associated with sole source awards relative to non-sole source awards is 53 percent, holding efforts to compete constant (.05). There is considerable downward bias by excluding other variables, as the magnitude increases with significance in Regressions 4 and 5. Holding SOW and effort to compete constant increases the magnitude of predicted change in contract value to 75 percent for sole source awards relative to non-sole source awards (.01). Including time and one-bid in the equation keeps the predicted change high at 77 percent (.05).

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[11] See Discussion section for more on this area

[12] See Appendix, Table 8, for a complete list of regressors

Time shows significance when controlling for one-bid, SOW, effort to compete, and sole source in Regression 4. The coefficient shows a 4 percent predicted change in contract value for an additional week in award process time (.05). The magnitude of change with time is not surprising given our observations of average contract amount in Table 9 and Figure 3 above.

Table 10
Summary of Significant Variables for Log (Contract Value) (Log-Linear OLS)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Log (contract value)	Effort to Compete	.01, .05	1,2,3,4,5
	Sole Source	.01, .05, .1	1,2,3,4,5
	Time	.05	4
	SOW	.1	5

4. Single-bid Awards

Analysis on the dummy one-bid variable is modeled as several probit regressions, and we endeavor to identify factors that most influence one-bid awards. Observing the one-bid dummy as the dependent variable changes the interpretation of its relationship with the regressors in each model. Here, we look at differences in predicted probability.[13]

Awards with some effort to compete show the strongest significance levels. All coefficients on effort to compete are negatively correlated to one-bid. That is, increased efforts to compete are associated with multiple vendors, and decreased competition is associated with evidence of one-bid. This is a likely observation, but interesting when controlling for all other factors. The difference in predicted probability of one-bid is 62 percent, given efforts to compete relative to no efforts, and controlling for hidden competition (.01). Adding more regressors decreases the difference in predicted probability of one-bid, but maintains a high level of significance. Regression 3 shows the difference in predicted probability of one-bid is 49.7 percent, given efforts to compete relative to no efforts, while holding time, SOW, hidden competition, contract value, the square of contract value, and overall vendor satisfaction rating[14] constant (.05).

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[13] See Appendix, Table 9, for a complete list of regressors, and probabilities

[14] Overall vendor satisfaction is new to the models and not included as one of the six satisfaction questions. It targets past relationships between customers and vendors. Small sample size in this variable will limit our findings. We include it here because of the likelihood that past performance might have influence over single-bids. The coefficient is not significant, but negative. That is, the more dissatisfied the vendor is, the greater the likelihood of competition. Including this variable is useful for both log (contract value) and discounts as dependent variables.

Table 11
Summary of Significant Variables for One-bid (Probit)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Log (contract value)	Effort to Compete	.01, .05	1,2,3,4
	(Contract Value)^2	05, .1	3,4
	Hidden Competition	.01	1,2

5. Discounts

The dependent dummy discount variable is used to determine what factors might drive prices down for the customer. Several factors to consider are past vendor performance, existence of competition, efforts to compete, and estimated contract value. The assumption is that any of these factors would increase the likelihood of a discount. The results, however, are limiting due to data constraints. Some customer agencies thought this data to be proprietary information or hindered access to reliable data.

Table 12 below offers a glimpse at the limitations of the discount variable analysis. Despite its shortcomings, we observe 41 awards with discounts. They are relatively similar in distribution as the average dollar value indicates. Awards with no discount have slightly lower value compared to awards with discounts. We speculate that large contracts would likely demand discounts, while smaller contracts would likely go without a discount. A difference in means test reveals no difference in means between discount and no discount at all levels of significance. This offers little conclusive evidence, as suggested below, in the ensuing analysis.

Table 12
Distribution of Discounts in Sample

Type	Count	Frequency	Average Contract Value
Discount	19	.32	$2,524
No Discount	22	.37	$2,290
Unavailable Data	19	.32	$3,517
Total	60	1	

The analysis shows time is the only significant variable across all four probit models.[15] With a positive correlation between time and discount, controlling for no other variable, the predicted probability of a discount, given a 2-week increase in award process time is 7.4 percent (.05). Controlling for log of contract value slightly decreases the magnitude in predicted probability of a discount to 6.5 percent (.05). Both results are statistically significant; however, when one-bid and overall vendor performance are included, time drops out and no variable is significant.

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[15] See Appendix, Table 10, for complete regression coefficients and significance

The results here are fairly inconclusive, and have much to do with the limitations of obtaining quality discount data. Significance on time, though, shows a positive trend from the sign on the coefficient. Increased time in the award process is associated with increase likelihood of discounts. We must be careful with issuing a blanket statement, however, as customers do have relationships with vendors in which they always receive discounts. In such a case, time is not a factor.

Table 13
Summary of Significant Variables for Discount (Probit)

Dependent Variable	Sig. Regressor	Sig. Levels	Regression
Discount	Time	.05	1,2

DISCUSSION

Our findings reveal a number of significant relationships that influence customer satisfaction, price, single-bids, and discounts. First, understanding customer satisfaction is the foundation for reviewing best value judgments in retrospect. We know from contract reviews that a standard approach to best value is judged on the breadth of technical expertise, the extent of past performance or corporate excellence, personnel qualification, and price; and while the weights assigned to each criterion vary by agency, technical expertise and past performance usually rank above price. The customer satisfaction measures we use point to the effectiveness of this best value judgment, and will facilitate a conclusion on how satisfaction varies across single-bid and multi-bid contracts.

Second, price varies across all contracts. As the data suggests above, there is indeed a relationship between total value and factors such as time and competition. Our observations therefore reveal how cost varies across single-bid and multi-bid contracts.

Third, all single-bid awards (including sole source awards) are different from multi-bid awards. We know the FAR mandates that RFQs be sent to at least three vendors to attract more than one bid in the award process; but, though not illegal, the process is questioned when only one bid is returned. What brings about these single-bid awards, and how do they compare to multi-bid awards? Statistical analysis reveals time, contract value, and competition efforts. Yet, are there additional biases not measured? We discuss these factors, those not measured, and any potential biases that misrepresent the data.

Lastly, understanding trends in discount analysis reveals the limitations of our data. We know that the average discount is between 4.2 on the low end and 5.7 percent on the high end; yet these averages are largely inconclusive due to customer contract scrubbing and misleading data.

We surmise our analysis by observing how government satisfaction changed over time. Using Kelman's 1990 data for comparison, we show marked improvement in satisfaction over time. The last decade was as period of procurement legislation reform, and our results show improvement.

CUSTOMER SATISFACTION

Customer satisfaction is generally very high. Despite a few outliers in the sample, we observe low dissatisfaction levels and very high ratings on accomplishment, delivery, cooperation and prices. One factor ubiquitous in significant relationship with customer satisfaction measures is the fair and reasonable price rating. This is not surprising given

strong correlations between price fairness and other measures; however, it is evidence of the relative importance of price in satisfaction judgments (Table 14 below).

Table 14
Correlations Between Fair Price Ratings and Other Satisfaction Variables

Variables	Dissatisfaction	Promises	Delivery	Accomplishment	Cooperation
Fair Price	-0.85	0.846	0.76	0.705	0.826

Award process time bears some, albeit weak, significance to satisfaction, and appears as a small factor in each measure. Aside from the rating on fair price, award time is the only other significant factor in dissatisfaction levels. In this case, increased award process time decreased the dissatisfaction level. Among other factors, time increased in significance on vendor promise ratings, accomplishment, and cooperation. Increased time is usually associated with increased competition, in-depth best value judgments, and price negotiation; yet, it is interesting that increased time is associated with small decreases in vendor cooperation ratings while all other ratings have the opposite effect. The likely explanation is that large contracts decrease the cooperation level of vendors, perhaps due to greater room for error and resistance to customer demands. Indeed, while contract value is not a significant variable in the cooperation model, it has a weak negative correlation with cooperation.

While contract cost had no significance, one-bids show relatively high significance levels across measures on vendor promises, delivery, accomplishment, and cooperation ratings. That is, on each measure the predicted change in rating is both positive and higher for single-bid awards than multi-bid awards. This is a strange reversal of expected trend, as we predicted the opposite to be the case. There are three reasons that offer explanations to this relationship. First, one-bids includes the sole source measure. Sole source work is largely the result of follow-on contracts, incumbency, or specialty of services. Chart 2 below shows the division of one-bid awards.

Chart 2
Composition of One Bid Awards
(includes sole source awards)

3% 6%

47%

44%

☐ Follow On/Incumbent

■ Timing/Type

☐ History

☐ Expertise
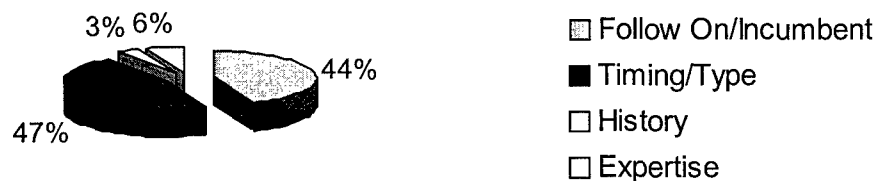
Follow-on and specialty of services makes up 50 percent of one-bid contracts. These vendors provide services that no other can, or provide a service as logical follow-on to

work already in progress. The likely effect is high satisfaction because the service is being provided regardless of few competing alternatives.

Second, pricing may be more accurate for single-bid awards than for multi-bid awards. Since price competition may not exist, the submission of additional costing data could allow for more complete cost and price evaluations for the government. Satisfaction with this price could drive this higher trend in satisfaction ratings. This explanation is offset slightly when looking at the relationship between one-bid and fair vendor prices. One-bid shows no significance; yet, this is offset with little or no significance of any variable on this rating. Rather, judgments on fair vendor prices appear to be high regardless of any factor.

Third, the data is slanted in favor of single bids. Table 15 below summarizes this trend. On average, single-bid and sole source awards have lower dissatisfaction ratings than multi-bid awards. Similarly, they have higher satisfaction ratings in all other categories.

Table 15
Average Ratings by Category

Category		Dissatisfaction	Promises	Delivery	Accomplishment	Cooperation	Fair price
Total One-bid	Average	1.47	9.6	9.6	9.79	9.7	9.7
	Std Dev	5.14	.67	.82	.57	.67	.78
One-bid, No Sole Source	Average	.30	9.9	10	9.9	9.9	9.8
	Std Dev	.75	.28	0	.27	.27	.55
Sole Source	Average	2.26	9.52	9.39	9.7	9.66	9.64
	Std Dev	6.52	.79	.988	.69	.81	.91
Multi-bid	Average	5.78	8.97	9	9.34	9.13	9.49
	Std Dev	18.1	1.87	1.67	1.61	1.8	1.58

The explanation lies in the standard deviations of each category. Dissatisfaction has a markedly higher standard deviation for multi-bid awards than single or sole source bids. This trend is consistent across each other category as well. Of the contracts reviewed, three out of the four total outliers are multi-bid and high in dissatisfaction; and when Contract and Program Officers were both included in the sample, it doubled the number

of outliers. These vendors garnered dissatisfaction ratings of between 50 and 100 percent, skewing the multi-bid satisfaction rating in the process.

We have labeled the poor performing contracts as outliers; but it can certainly be the case that a larger majority of multi-bid awards provide poor service compared to single-bid awards. If this were the case, other factors such as close scrutiny of single-bid vendors (motivating these vendors to provide the best service) would come into play. These observations do not mean we commit to the extreme and say all single-bids are great for government business. Rather, we are reluctant to condemn single-bid awards based on our observations.

The SOW[16] is another point of significance meriting discussion on best value. It shows relevancy in vendors keeping promises, accomplishment, and prices. Specifically, an increase in the SOW quality rating is associated with an increase in customer satisfaction. This trend is expected, as several Contract Officers echoed problems with SOW quality during the award process. Sloppy or vague SOWs leave the vendor with an incomplete or incoherent set of guidelines for the contracted work. As such, SOWs of lesser quality increase prices and decrease work quality. Our data supports this trend. In fact, increasing the quality rating of SOWs by one point on a scale of one to five increases the three ratings by .4 points. With already high average ratings above 9.4 on satisfaction, this small change would result in a relatively large increase. Given the nature of best value judgments, it is in the best interest of each customer to improve or keep high standards for the SOW. If work specifications are poorly written, best value becomes less relevant.

CONTRACT VALUE (PRICE)

We see in the findings above that contract value varies across different dimensions. Our findings show the strongest variables associated with changes in price to be time, efforts to compete, and sole source awards. Not surprisingly, sole source awards are very significant in each analysis of contract value. That is, the predicted change in contract value associated with sole source awards is higher (anywhere between 53 to 75 percent higher) than non-sole source awards. Tempting as it may be for customers to pass this off as vendor expertise or a follow-on contract, those reasons account for only one portion of sole source awards. For example we know that 33 percent of sole source awards have some relation to timing constraints; and in five cases customers failed to allocate more than four days for the awards process. Compared to multi-bid awards that averaged 6.6 weeks, sole source awards averaged 2.8 weeks in award process time.[17] This is a reasonable area for improvement. The reluctance to compete contracts based on a need for quick turnaround time on contract renewals is a poor excuse for urgency.

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[16] The average SOW rates 4.34 with a range of 2 to 5

[17] The average time to get under contract is 5.58 weeks with a range of 1 day to 37 weeks

Customers engaging in advanced planning could eliminate the higher costs associated with these single-bids.

The alternative, and possible explanation, to this argument is that sole source awards are predicted to be more expensive because they require specific tasks and expertise that no other vendor provides. In 60 percent of sole source cases, for example, vendor specific IT systems guided sole source need for contract renewal. This would call for urgency in the renewal process.

Figure 7
Average Contract Values Across Contracts
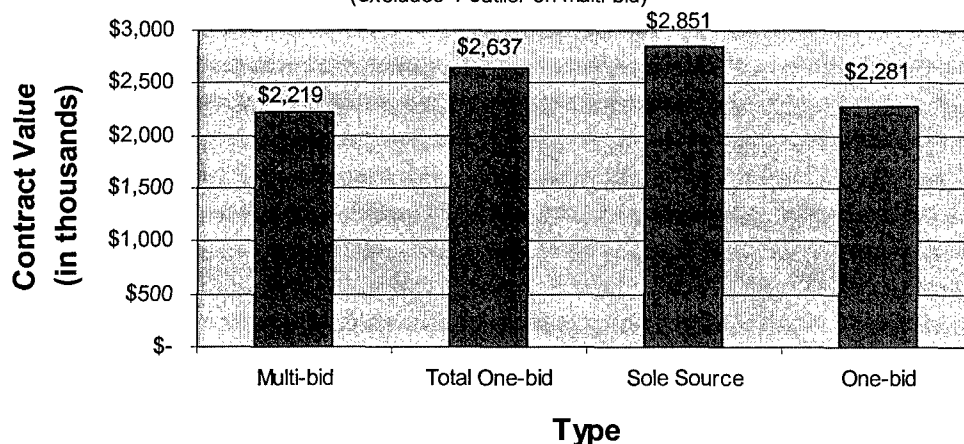(excludes 1 outlier on multi-bid)

Figure 7 shows the average dollar value of contracts by type. These averages support the findings above that the predicted change in contract value is higher for sole source awards than non-sole source awards. We chose to exclude one outlier on contract value above $20 million for the multi-bid group, as it inflated the true average. We also observe single-bid contracts to be slightly higher in average value than multi-bid; this is largely due to the low number of single-bids in the sample, in which any outliers inflate its average relative to a larger group with a more even distribution. Again, this is not surprising as some contracts are much larger due to scope, type of work, and are sparing in number. One concern is that customers create future sole source situations for themselves by entering into original sole source contracts. Such vendors subsequently use unique software and hardware that would manifest into high transition costs if services were recompeted.

Time is related to contract value. A one-week increase in the award process is associated with a 4.6 percent increase in contract value. In this case, it is important to note that correlation is not the same as causation. Time does not increase the contract value; rather, larger contracts may increase the award process to allow for competition. As such, efforts to compete were associated with a predicted change in contract value of between 57 and 69 percent relative to no efforts to compete – the higher the value, the

more likely the search for competition. Among the other variables in best value, this is evidence that customers indeed try to obtain a best value judgment on the price of larger contracts.

SINGLE-BIDS

Some discussion above argues that decreases in the award process time increases the likelihood of sole source and single-bid awards; however, while increased time is associated with increased competition (time is negatively correlated to the one-bid variable), it bears no significance in our findings. This could be due to the low number of single-bid, non-sole source, contracts in our sample. We are therefore cautious to make any blanket statement regarding time and single-bid, but recommend a larger sample of single-bid, non-sole source, contracts in future studies.

The analysis reveals efforts to compete, hidden competition, and contract value as significant factors associated with single-bid awards. The difference in predicted probability of single-bid awards is between 49 and 62 percent for awards with evidence of efforts to compete relative to no effort, with effort being negatively correlated with single-bids. That is, more efforts to compete are associated with increased competition. This is an expected, but important, outcome; by competing services, customers will decrease the probability of single-bid outcomes by 50 percent or more.

Another expected trend is the significance of hidden competition. Evidence of hidden competition is associated with increased probability of single-bid contracts. This is on the order of the same magnitude as efforts to compete. While this provokes the obvious recommendation calling for increasing efforts to ensure vendors are not dissuaded from competing, the small number of hidden competition awards (10 of 60) precludes a clear judgment to this effect.[18] The main difficulty here is vendors taking themselves out of the bid due to competing large or well-known firms. To this effect, customers can reduce the impact of hidden competition through policies that should already be in practice. For example, responsible agencies will try to compete large businesses with other large businesses, small businesses with other small businesses, or if mixed, give small businesses some advantage in the bidding process to ensure fair competition.

There is no relationship between single-bids and contract value. While the ubiquitous concern in government contracting is that single-bids are higher in value, there is no significance on this variable. Much of this is due to very large contracts that sway the data for both single-bid and multi-bid contracts. Essentially, some contracts are inherently larger than others due to the nature and scope of the work. Five contracts had this characteristic, which inflated averages on both sides.

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[18] When we controlled for contract value significance in this variable drops out.

DISCOUNTS

The only measured factor with significance determining discounts is time; however, we question this result for two reasons. First, the difference in predicted probability of discounts, given a 2-week change in award process time is 7.4 percent – a low probability. While the relationship is positive—an increase in award time increases the likelihood of discounts—adding additional variables drops time from significance. Second, the data on discounts is highly questionable; notwithstanding limited access to discount information, several immeasurable factors influence discounts. We know from interviews that if discounts are offered, it is usually for three reasons: Vendors want to continue work on government contracts in the future; vendors have a history with government contracts and customers in the past; and vendors think that others are competing for the award and want the most attractive bid.

Because time is positively associated with larger contract values, the higher predicted change in contract value for time increases does offer some understanding of an underlying trend in discounts. It implies that highly scrutinized contracts may take more time and attract discounts because these awards are so critical for future business opportunities with the government. If this is the case indeed, then our observations are highly relevant.

SATISFACTION CHANGE OVER TIME

In 1990, Dr. Steve Kelman of the John F. Kennedy School of Government conducted a study of the federal procurement system. Part of this effort asked government workers to state in percentage terms their dissatisfaction level, and their degree of satisfaction with vendors on a scale of 1 to 10 (1 being worst, 10 being best) in terms of vendors keeping promises and sticking to the contracted delivery schedule. Contract and Program Officers were asked these same questions fourteen years later for this study on single-bid IT service contracts.

In 1990 government respondents indicated a 24.5 percent dissatisfaction level with the vendor in general. Responding to the same question today, interviewees indicate a 4.77 percent dissatisfaction level with the vendor. On a scale of 1 to 10, Kelman reported an average 7.0 rating for vendors keeping promises according to government respondents in 1990. Today, Contract and Program Officers rate the vendor on keeping promises at an average of 9.3 on a 10-point scale. Similarly, Kelman asked government respondents to rate vendors in terms of sticking to the contracted delivery schedule. The average rating on a 10-point scale in 1990 was 6.2. With the same question today, contracting officers responded with an average rating of 9.3.

Vendor performance improved substantially over time, undoubtedly due to a combination of new legislation in the 1990s, greater customer responsibility, and a greater demand for

quality services. The private sector role in government contracting has become more important over time, sending a message to vendors that if quality and prices are not up to par, customers will not be afraid to recompete services. The role of Contract Officers has also changed over time, as the FAR has given them leeway to operate on their best business judgment. As such, members of the procurement team may use their best judgment if a specific strategy, practice, policy or procedure is in the best interests of the government. These reforms have improved Contract Officer discretion in the process, and facilitated improved best value judgments.

CONCLUSION

Our study examined the verity of the common perception that single-bid orders are more costly, lower in performance quality, and shorter in pre-award process time than competitively-bid orders. In short, we found that single-bid orders are not more costly, are not lower in performance quality, and that award process time is not related to the number of bids. The main conclusions are outlined below.

First, our findings reveal that customer satisfaction is very high for all types of orders. We found low levels of dissatisfaction with vendors, and high levels of satisfaction in accomplishment of the desired objective, keeping promises, sticking to the delivery schedule, and fairness of prices. Since these satisfaction measures are a good proxy for whether or not best value is actually an effective way of selecting vendors, we can say with certainty that the current best value approach is getting customers what they need in a way advantageous for all involved.

It is also the case that customer satisfaction has improved over time. Compared with the findings from Kelman's study, our results show that the procurement process has improved tremendously over the past fourteen years.

SOWs have a marked impact on customer satisfaction. It is their role to describe the work to be done in detail; to this effect, the more instruction received, the better the vendor performance in filling the needs of the customer.

In contrast to conventional wisdom, the number of bids received on a given order does not affect satisfaction. Analysis shows that a larger proportion of competitively-bid contracts were poor-performing relative to single-bid contracts. However, it is important to note that this could be due to some abnormality in data selection; it is hard to extrapolate from our study due to its size and location constraints. For more complete answers, we recommend a study with larger sample sizes, a broad selection of agencies and contract officers in different parts of the country, and mandatory agency participation.

Second, price varies across all contracts, regardless of the number of bids. Multi-bid and single-bid awards have similar average values, depending on the inclusion of outliers. Sole source awards, however, tend to be higher in value. Tempting as it may be to pass this off as vendor expertise or a follow-on contract, these reasons account for only one portion of sole source awards. Time constraints also played a role; compared to multi-bid awards that averaged 6.6 weeks, sole source awards averaged 2.8 weeks in award process time.

In some situations, the decisions made by customers themselves put them in the position of accepting sole source awards into the foreseeable future. In the IT field, so many

awards serve unique software and systems. Not competing an original award can have ramifications into the future, as all updates to that software will likely have to be made by the original developer of the product. Since we also discovered that there is a relationship between efforts to compete and increased competition, it is all the more important to allow for adequate competition time in the original contract. If the effort is made, it is likely that competition will result.

There are some trends in which contracts receive discounts and which do not. We know that the average discount was between 4.2 and 5.7 percent; yet we hesitate to draw conclusions here because of incomplete data. Longer award process time increases the likelihood of receiving a discount, and increased time allows for increased negotiation. This trend is consistent with what we had assumed. We discovered that discounts were offered by three types of vendors: Vendors who hoped to continue working with the government in the future, vendors who had worked with the government in the past, and vendors who thought other vendors might be competing for the award.

To conclude, we reiterate the findings of our study. Single-bid orders are not more costly, are not lower in performance quality, and award process time is not related to the number of bids. Customer satisfaction has improved over time, as the best value system under the new regulations appears to be working. Although we advocate consideration of the recommendations we have proposed, overall we are optimistic about the effect of the recent reforms made to the procurement system.

APPENDICES

Table 1
Variables in Regression Models of Customer Satisfaction and Contract Data

Variable	Definition	Sample Average
Customer Satisfaction Data Variables		
Dissatisfaction	Customer rating on percent level of dissatisfaction with the vendor on the contract in question (0 to 100% scale, 0 = completely satisfied; 100 = completely dissatisfied)	3.63
Promises	Customer rating for vendor performance on keeping promises (1 to 10 scale, 1 = worst; 10 = best)	9.38
Delivery	Customer rating on the vendor sticking to the contracted delivery schedule (1 to 10 scale, 1 = worst; 10 = best)	9.32
Accomplishment	Customer rating on the vendor accomplishing what was expected (1 to 10 scale, 1 = worst; 10 = best)	9.58
Cooperation	Customer rating for vendor performance on keeping promises (1 to 10 scale, 1 = worst; 10 = best)	9.46
Vendor Fair Price	Customer rating for vendor performance on keeping promises (1 to 10 scale, 1 = worst; 10 = best)	9.59
Vendor Overall	Customer rating on percent level of dissatisfaction with the vendor in general (0 to 100% scale, 0 = completely satisfied; 100 = completely dissatisfied)	4.77
Contract Data Variables		
Contract value	Total value of contract	$2,797,488
One-bid	1 if award was single-bid (includes sole source) 0 otherwise	.51
Sole Source	1 if sole source award 0 otherwise	.358
Discount	1 if award had discount 0 otherwise	.46
Time in Weeks	Length of time to get under contract in weeks	5.58
SOW	Customer rating on statement of work (1 to 5 scale, 1 = worst; 5 = best)	4.34
Labor Hours	1 if contract is labor hours 0 if otherwise	.164
Time and Materials	1 if contract is time and materials 0 otherwise	.443
Fixed Price	1 if contract is fixed price 0 otherwise	.417
Effort to compete	1 if some effort to compete 0 otherwise	.696
Hidden Competition	1 if hidden competition present 0 otherwise	.157

Table 2
Dissatisfaction Regressions
Dependent Variable: Percent time customer is dissatisfied with the vendor

Regression	(1)	(2)	(3)	(4)	(5)
Regression Model:	OLS	OLS	OLS	OLS	OLS
Log (contract value)	2.40 (1.95)	4.3 (3.82)			-.27 (1.28)
One-bid	-4.14 (2.97)	-7.43 (4.99)	-4.78 (3.39)		-2.36 (2.05)
Discount		-1.2 (3.36)	-.83 (3.40)		-1.53 (1.76)
Time in Weeks		-.62* (.372)	-.91* (.48)		-.12 (.139)
SOW		-2.52 (2.58)	-2.26 (2.35)		1.11 (1.83)
Contract Value			$6.65e^{-6}$ $(4.61e^{-6})$		
(Contract Value)^2			$-3.50e^{-13}$ $(2.46e^{-13})$		
Vendor Price Fair				-9.43*** (1.36)	-9.68*** (1.19)
Constant	-28.21 (25.13)	-37.31 (40.65)	12.40 (10.0)	94.15*** (13.51)	98.08*** (18.52)
N	60	52	52	60	52
R^2	.062	.133	.243	.729	.816

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 3
Promise Satisfaction Regressions
Dependent Variable: Rating on vendor keeping promises

Regression	(1)	(2)	(3)	(4)	(5)	(6)
Regression Model:	OLS	OLS	OLS	OLS	OLS	OLS
Log (contract value)		-.150 (.21)				-.047 (.157)
One-bid	.703 (.331)		.787** (.379)	.838** (.379)	.645*** (.228)	.649** (.273)
Discount			.47 (.437)	.099 (.386)	.155 (.227)	.149 (.205)
Time in Weeks				.110** (.045)	.026 (.02)	.031* (.017)
SOW				.446** (.215)	.12 (.144)	.13 (.166)
Contract Value			$-4.43e^{-7}$ $(3.74e^{-7})$			
(Contract Value)^2			$2.47e^{-14}$ $(2.06e^{-14})$			
Vendor Price Fair					.92*** (.079)	.915*** (.051)
Constant	8.97 (.312)	11.44*** (2.88)	9.16*** (.41)	7.19 (.96)	-.66 (.91)	.027 (1.91)
N	60	52	52	52	53	52
R^2	.06	.012	.200	.322	.785	.785

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 4
Delivery Satisfaction Regressions
Dependent Variable: Rating on vendor sticking to the delivery schedule

Regression	(1)	(2)	(3)	(4)
Regression Model:	OLS	OLS	OLS	OLS
Log (contract value)				
One-bid	1.03**	1.06**	.78**	.563**
	(.459)	(.466)	(.35)	(.28)
Discount	.161	.091	-.039	.002
	(.369)	(.384)	(.370)	(.244)
Time in Weeks		.025	.08*	.024
		(.016)	(.045)	(.030)
SOW			.31	.035
			(.279)	(.264)
Contract Value			$-5.73e^{-7}$*	$-1.31e^{-7}$
			$(3.86e^{-7})$	$(2.40e^{-7})$
(Contract Value)^2			$3.08e^{-14}$	$8.76e^{-15}$
			$(2.06e^{-14})$	$(1.29e^{-14})$
Vendor Price Fair				.767***
				(.061)
Constant	8.5***	8.38***	7.81***	1.445
	(.56)	(.578)	(1.31)	(1.33)
N	54	54	52	52
R^2	.114	.12	.25	.645

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 5
Accomplishment Satisfaction Regressions
Dependent Variable: Rating on vendor accomplishing the objective

Regression	(1)	(2)	(3)	(4)	(5)
Regression Model:	OLS	OLS	OLS	OLS	OLS
Log (contract value)		-.319 (.246)	-.496 (.313)		
One-bid	.719* (.424)	.68* (.394)	.737* (.412)	.467* (.278)	.31 (.198)
Discount	.371 (.325)	.38 (.325)	.187 (.299)	.15 (.30)	.19 (.185)
Time in Weeks			.058* (.030)	.086** (.039)	.04 (.038)
SOW			.395** (.185)	.36** (.165)	.167 (.127)
Contract Value				$-6.59e^{-7}$ $(3.65e^{-7})$	$-3.41e^{-7}$ $(3.61e^{-7})$
(Contract Value)²				$3.40e^{-14}$ $(1.96e^{-14})$	$1.81e^{-14}$ $(1.91e^{-14})$
Vendor Price Fair					.55*** (.146)
Constant	8.89*** (.538)	13.4*** (3.08)	13.98*** (3.47)	8.11*** (.689)	3.52*** (1.32)
N	54	53	52	52	52
R^2	.09	.143	.21	.329	.58

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 6
Cooperation Satisfaction Regressions
Dependent Variable: Rating on vendor cooperation with the government

Regression	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Regression Model:	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Log (contract value)						-.50 (.36)	-.015 (.169)
One-bid	1.06** (.51)	.778* (.429)	.87** (.417)			.62 (.43)	.486* (.269)
Discount	.23 (.399)	.22 (.385)	.28 (.414)	.36 (.399)	.29 (.385)	.16 (.33)	.276 (.187)
Time in Weeks				-.045** (.021)	-.035 (.025)	.006 (.047)	-.056** (.025)
SOW				.233 (.188)	.29 (.201)	.438* (.262)	.008 (.204)
Contract Value							
(Contract Value)^2							
Vendor Price Fair							.91*** (.079)
Labor Hours	.13 (.52)						
Time and Materials		.627** (.309)			.67* (.36)	.802* (.427)	
Fixed Price			-.63 (.439)				
Log (contract value) x One-bid				.065* (.033)	.044 (.031)		
Constant	8.59*** (.67)	8.48*** (.655)	8.96*** (.456)	7.84*** (1.21)	7.38*** (1.32)	13.7*** (3.81)	.74 (2.06)
N	55	55	55	53	53	53	53
R^2	.114	.146	.148	.146	.179	.25	.762

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 7
Price Satisfaction Regressions
Dependent Variable: Rating on vendor price as fair and reasonable

Regression	(1)	(2)	(3)	(4)
Regression Model:	OLS	OLS	OLS	OLS
Log (contract value)	-.21 (.183)	-.316 (.267)	-.478 (.35)	
One-bid	.34 (.258)	.50 (.36)	.44 (.36)	.33 (.302)
Discount		.15 (.409)	-.018 (.37)	-.079 (.332)
Time in Weeks			.054 (.034)	.072* (.043)
SOW			.376* (.201)	.359** (.175)
Contract Value				$-5.54e^{-7}$ $(4.11e^{-7})$
(Contract Value)^2				$2.76e^{-14}$ $(2.20e^{-14})$
Vendor Price Fair				
Sole Source	-.136 (.236)	-.037 (.353)	.12 (.401)	
Constant	12.48*** (2.36)	13.62*** (3.36)	14.04 (3.81)	8.23*** (.720)
N	60	53	52	53
R^2	.047	.08	.139	.208

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 8
Contract Value Regressions
Dependent Variable: Log (Total Contract Value)

Regression	(1)	(2)	(3)	(4)	(5)
Regression Model:	OLS	OLS	OLS	OLS	OLS
One-bid		-.142	.07	-.028	
		(.32)	(.332)	(.319)	
Discount					
Time in Weeks				.046**	
				(.018)	
SOW			.237	.26	.28*
			(.176)	(.175)	(.167)
Effort to Compete	.65***	.611***	.695***	.574**	.596***
	(.227)	(.231)	(.239)	(.241)	(.231)
Sole Source	.53**	.653**	.608*	.77**	.749***
	(.229)	(.31)	(.323)	(.304)	(.248)
Constant	13.51***	13.58***	12.34***	12.06***	11.96***
	(.215)	(.25)	(.877)	(.87)	(.78)
N	60	60	60	60	60
R^2	.0532	.0537	.089	.136	.14

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

Table 9
Single-bid Regressions
Dependent Variable: One-bid = 1 if single-bid, = 0 if competition

Regression	(1)	(2)	(3)	(4)
Regression Model:	Probit	Probit	Probit	Probit
Discount				
Time in Weeks		-.016 (.028)	-.07 (.063)	-.07 (.06)
SOW				-.05 (.284)
Effort to Compete	-1.79*** (.399)	-1.63*** (.442)	-1.30** (.588)	-1.35** (.577)
Sole Source				
Hidden Competition	1.36*** (.451)	1.22*** (.48)		-.95 (.770)
Contract Value		$-8.07e^{-8}$ $(7.27e^{-7})$	$-1.66e^{-7}$ $(9.30e^{-8})$	$-1.11e^{-7}$ $(1.22e^{-7})$
Vendor Overall			-.03 (.024)	-.03 (.024)
Constant	1.09*** (.336)	1.02*** (.36)	1.51** (.592)	1.66 (1.28)
Difference in Predicted probability of one-bid, effort to compete v. no effort (percentage points)[19]	62%	61.8%	48.8%	49.7%

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

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[19] Effort to get competition is negatively correlated with one-bid. Increased efforts to get competition are associated with multiple vendors, and decreased competition efforts to get competition are associated with evidence of one-bid.

Table 10
Discount Regressions
Dependent Variable: Discount = 1 Yes, = 0 No

Regression	(1)	(2)	(3)	(4)
Regression Model:	Probit	Probit	Probit	Probit
Time in Weeks	.102**	.116**	.092	.097
	(.051)	(.059)	(.074)	(.079)
SOW				
Effort to Compete				
One-bid				.332
				(.477)
Hidden Competition				
Log (Contract Value)		-.19	-.12	-.137
		(.188)	(.227)	(.233)
Contract Value				
(Contract Value)²				
Vendor Overall			-.012	-.009
			(.017)	(.017)
Constant	.56**	2.09	1.3	1.29
	(.282)	(2.60)	(3.22)	(3.23)
Difference in Predicted probability of discount, time in weeks change from 0 to 2 weeks (percentage points)[20]	**7.4%**	**6.5%**	**No significance**	**No significance**

These regressions were estimated using the PAE data set described in Research Methods. Standard errors are given in parentheses under the coefficients. Individual coefficients are statistically significant at the *10%, **5% or ***1% level.

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[20] Time in Weeks is positively correlated to Discount. The predicted probability of a discount, given an increase in time in weeks from 0 weeks to 2 weeks is 7.4%. Increase in time is associated with increased probability of a discount.

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